

In the Claims:

1           1.     A surgical irrigator comprising in combination, a pumping unit having an outlet, a  
2     handpiece, and tubing connecting the outlet of said pumping unit to said handpiece, said  
3     pumping unit including an impeller and an electrically powered motor for driving the impeller,  
4     said handpiece including an irrigation valve, the improvement comprising an optical flow sensor  
5     positioned near the outlet of the pumping unit for sensing liquid flow through said tubing when  
6     said irrigation valve is open, and means responsive to said optical flow sensor for turning said  
7     motor on to drive said impeller.

1           2.     A surgical irrigator according to claim 1, wherein said optical flow sensor  
2     includes a float having a first position when the irrigation valve is closed and a second position  
3     when the irrigation valve is open.

1           3.     A surgical irrigator according to claim 2, wherein said optical flow sensor  
2     includes a light source and a photosensor responsive to light from said light source, said float  
3     blocking the light path between the light source and photosensor in one of said positions.

1           4.     A surgical irrigator according to claim 3, wherein said means for turning said  
2     motor on includes a detector responsive to said photosensor for connecting said motor to a source  
3     of electrical energy.

1 5. A surgical irrigator comprising in combination, a pumping unit having an outlet, a  
2 handpiece, and tubing connecting the outlet of said pumping unit to said handpiece, said  
3 handpiece including an irrigation valve, said pumping unit including an impeller, batteries, and a  
4 battery powered motor for driving the impeller, and an optical flow sensor for sensing liquid flow  
5 through said tubing when said irrigation valve is open, means responsive to said optical sensor  
6 for turning said motor on to drive said impeller, and a manually operable switch for selectively  
7 connecting the batteries in a circuit with the motor.

1 6. A surgical irrigator according to claim 5, wherein said optical flow sensor  
2 includes a float having a first position when the irrigation valve is closed and a second position  
3 when the irrigation valve is open.

4 7. A surgical irrigator according to claim 6, wherein said optical flow sensor  
5 includes a light source and a photosensor responsive to light from said light source, said float  
6 blocking the light path between the light source and photosensor in one of said positions.

1 8. A surgical irrigator according to claim 7, wherein said means for turning said  
2 motor on includes a detector responsive to said photosensor for connecting said motor to said  
3 batteries when said manually operable switch connects said batteries in circuit with said motor.

1 9. A surgical irrigator according to claim 7, wherein said impeller, batteries and  
2 battery powered motor are located in a housing having a deck which separates the impeller from

the batteries and motor, and a printed circuit board attached to the deck in the same compartment as the batteries and motor, said light source, photosensor and means for turning said motor on being attached to said printed circuit board.

10. A surgical irrigator according to claim 5, wherein said pumping unit includes upper and lower contacts for engaging the terminals of said batteries, and wherein said manually operable switch moves one of the batteries out of electrical contact with one of its associated contacts.

11. A surgical irrigator according to claim 10, wherein said manually operable switch includes a rotatable arm and camming means responsive to rotation of said arm for moving said one battery.

Sub a1 12. A surgical irrigator, comprising a pumping unit having an inlet and an outlet, a handpiece and tubing connecting the outlet of said pumping unit to said handpiece, said pumping unit including means for supporting the pumping unit on a pole or the like, a flexible tube connecting at one end to said inlet, and a spike connected to the other end of said flexible tube for connecting said inlet to an irrigation bag, said spike being coated with a lubricant.

13. A surgical irrigator according to claim 12, wherein said lubricant comprises silicone.